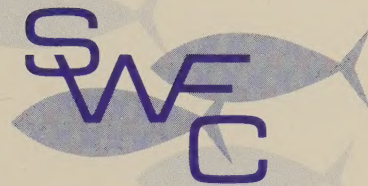


4/11/83

Library

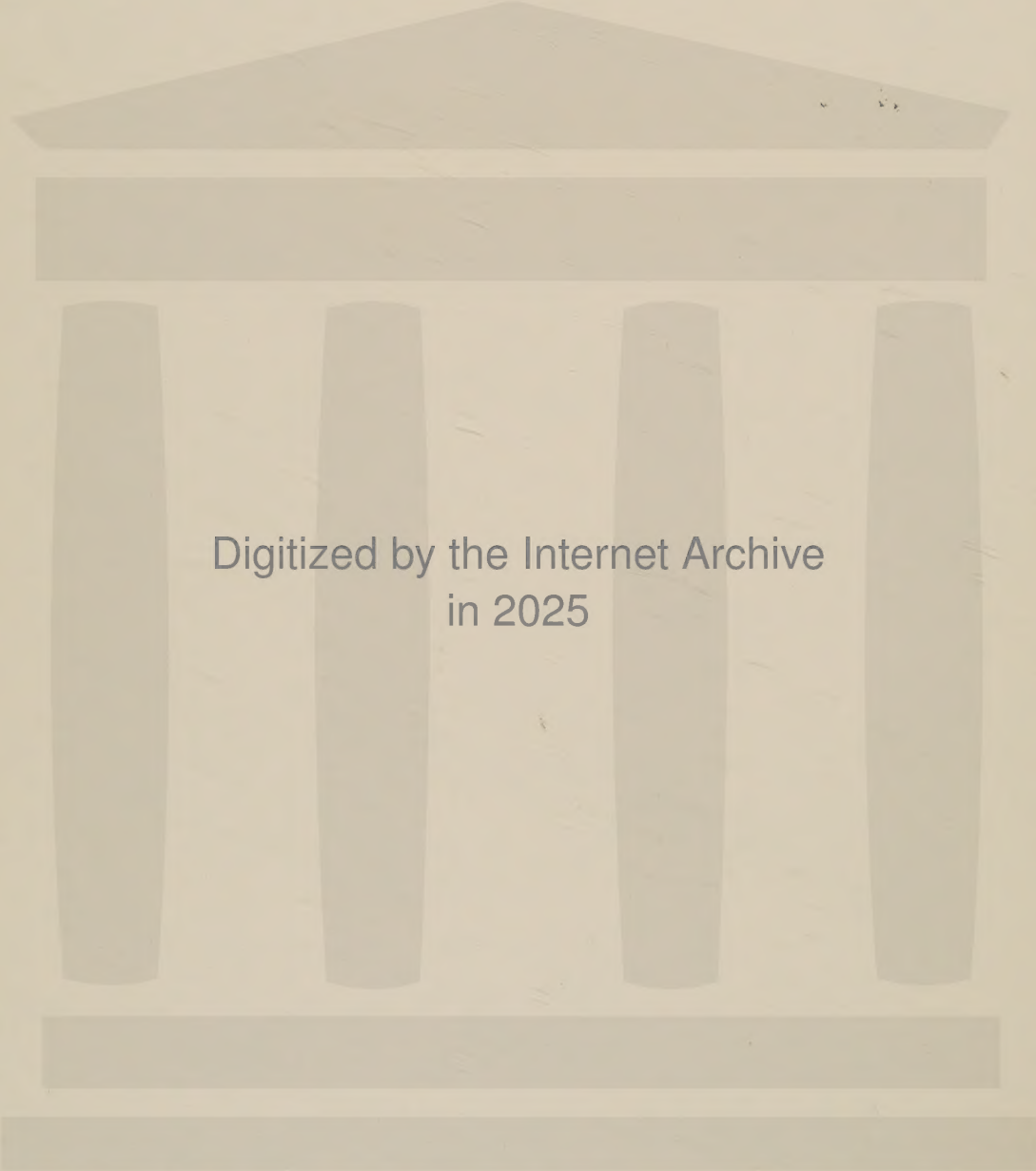
HONOLULU
LA JOLLA
MONTEREY
TIBURON



MONTHLY REPORT - JANUARY 1983

TABLE OF CONTENTS AND RESEARCH HIGHLIGHTS

	Page
PUBLICATIONS	1
HONOLULU LABORATORY	5
Reports Prepared for the Office of Ocean Minerals and Energy	5
Morphology of Armorhead Studied	5
LA JOLLA LABORATORY	7
Pacific Mackerel Sampling Study Initiated	12
mtDNA Isolation Techniques Evaluated on Fresh and Frozen Samples	13
1983 Marine Mammal Cruise on <u>Jordan</u> Underway	19
TIBURON LABORATORY	20
Second Western Groundfish Conference Termed Success	20
Work Progressing on Fish Aggregating Device	21
FISHERIES INFORMATION SYSTEMS AND AUTOMATIC DATA PROCESSING	24
Standard Word Processing System Considered	27
MISCELLANEOUS	28
Honors, Awards, Seminars, Public Affairs, Visitors, Meetings and Travel, and Personnel	28



Digitized by the Internet Archive
in 2025

SOUTHWEST FISHERIES CENTER
LA JOLLA, CALIFORNIA

HONOLULU LABORATORY
LA JOLLA LABORATORY
TIBURON LABORATORY
PACIFIC ENVIRONMENTAL GROUP

MONTHLY REPORT - JANUARY 1983

STATUS OF PUBLICATIONS

Published

Perrin, W.F., T.D. Smith and G.T. Sakagawa. 1982. Status of populations of spotted dolphin, Stenella attenuata, and spinner dolphin, S. longirostris, in the eastern tropical Pacific. FAO Fisheries Series No. 5, vol. IV:67-83.

This paper reports progress on assessing the status of three populations of two species of dolphins of the genus Stenella involved in the purse-seine fishery for tuna in the eastern tropical Pacific Ocean. The types of data used, the methods used to collect and analyze them and the main assumptions and other sources of uncertainty in the study - as well as the measures taken in some cases to account for these - are summarized.

The size of the population of offshore spotted dolphins (S. attenuata sub-species) in 1974 was first estimated to be 2.3-4.9 million, based on an aerial survey. The annual capacity for increase (total births minus natural deaths) was estimated to be 1.4-4.0%, and the annual rate of observed incidental mortality based on an estimated kill in 1974 of 79,900-97,300 animals was estimated to be 1.6-4.2%. Comparison of these rates indicated that the number of spotted dolphins killed in the fishery in 1974 was at or near the population available after natural mortality. Revised estimates for 1974 give a population size between 3.1-3.5 million dolphins (a preferred, central estimate from a larger range), of which 72,000 were killed in the tuna fishery - this gives an incidental fishing mortality rate of 2.1-2.3%. This rate was compared with the annual capacity for increase as originally estimated and with an independently figured estimate of the incidental mortality rate the population could tolerate. The

population size of a dolphin involved in the tuna fishery, the eastern spinner dolphin (S. longirostris sub-species) was given in revised estimates to be between 1.1-1.2 million (also a preferred central estimate). The number of animals killed incidentally in 1974 was estimated to be 21,000 animals. The resulting incidental mortality rate, 1.8-1.9%, was compared with an estimated annual reproductive rate of 8.3%, the low value of which indicates no apparent response of the population to exploitation. For both the offshore spotted dolphin and the eastern spinner dolphin, the revised estimates indicate that if the sizes of their populations were increasing or decreasing under the levels of fishing mortality in 1974, they were probably doing so at low rates. The impact of the tuna fishery on the whitebelly spinner population (S. longirostris sub-species) has not yet been assessed. There is a need for increased acquisition of relevant biological and catch data, expanded surveys of population and estimation of certain life history parameters.

Polachek, T. 1983. Possible effects of sampling biases on reproduction rate estimates for porpoise in the eastern tropical Pacific. NOAA Technical Memorandum, NMFS, SWFC-TM-26.

Smith, T.D. 1982. Current understanding of the status of small cetacean populations in the Black Sea. FAO Fisheries Series No. 5, vol. IV:121-130.

A fishery using guns and nets for the common dolphin, Delphinus delphis, Azov dolphin, Phocoena phocoena, and bottlenose dolphin, Tursiops truncatus, in the Black and Azov Seas has been pursued since about 1870 from the USSR, Turkey, Bulgaria and Romania. Steadily declining annual Soviet harvests since the maximum Soviet catch of 135,000-140,000 animals in 1938, despite an increased catching effort, led to seasonal management restrictions by the USSR in 1962, and a complete closure of the fishery in the USSR, Romania and Bulgaria in 1967. The final annual Soviet catches of 5,600-7,400 animals reported for 1964-66 represent a major collapse of the fishery and were accompanied by apparent marked changes in the age and sex composition of the harvest and a change in the species composition from the historically predominant D. delphis to predominantly P. phocoena. The fishery continues in Turkey with recent reported annual catches approaching the 1938 Soviet maximum; the loss rate is estimated to be high because of the use of guns as the harvesting method.

Limited catch statistics are available since 1927, except for Romania, and are generally reported only for all species combined in total metric weight. Analysis indicates that the exploitation rate was probably excessive at the height of the fishery in 1936 (12.5-20.0%) and may remain so today for the Turkish fishery (7.9-100.8%).

Annual Soviet aerial surveys initiated since the 1967 moratorium provide questionable estimates of total population size of Black Sea porpoises. Problems with these estimates and probably also with kill estimates preclude definite understanding of the present state of the population and indicate the need to refine both these statistics. Present observations are confined to recognition that the numbers of porpoise in the Black Sea have declined substantially to marginal levels due to the direct fishery: the present Turkish fishery is important, particularly as it continues now when the stocks are probably reduced.

Winkler, Michele, Shari E. Sitko and Paul N. Sund. 1983. Tunas-- nomads of the sea. Sea Frontiers 29(1):51-56.

Translation

Kihara, Yoshifumi. 1981. Fishery based on the payao method in the Philippines (Tōnan Ajia no tsukegyohō (ukigyoshō) -- Philippine-hen). Suisan Sekai 30(12):78-84. (Engl. transl. by Tamio Otsu, 1982, 12 p., Transl. No. 76; available Southwest Fisheries Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96812).

Administrative Report

Honolulu Laboratory

Polovina, Jeffrey J., and Nathaniel T. Shippen. 1983. Estimates of the catch and effort by Japanese longliners and baitboats in the Fishery Conservation Zone around the Mariana Archipelago. SWFC Admin. Rep. H-83-1.

Approved by Center Director

Gerrodette, Tim. Statistical error in conservation and management. For consideration for publication in Environmental Conservation.

Holts, Dave, Andy Dizon, and Earl Weber. A project to study and track striped marlin, swordfish and thresher sharks. For consideration for publication in the Underwater Telemetry Newsletter.

MacGregor, John S. Growth of the blue rockfish (Sebastes mystinus). For consideration for publication in CalCOFI Reports.

Picquelle, Susan J., and Roger P. Hewitt. The northern anchovy spawning biomass for the 1982-83 California fishing season. For consideration for publication in CalCOFI Reports.

Polacheck, Tom. Reproductive estimates as a source of information
on survival rates. For publication in the IWC/SWFC Cetacean
Reproduction Conference Proceedings.

HONOLULU LABORATORY

INSULAR RESOURCES INVESTIGATION

Reports Prepared for the Office of Ocean Minerals and Energy

Richard N. Uchida, Leader of the Insular Ecosystem Program, reports that he and research assistant Michael P. Seki completed reports for NOAA's Office of Ocean Minerals and Energy under an agreement for a cooperative study on the potential impact to fisheries from operations of ocean thermal energy conversion (OTEC) facilities. The reports, "Summary of pertinent information on the attraction effects of artificial structures placed in tropical and subtropical waters," by Seki, and "Summary of pertinent biological characteristics of potential ocean thermal energy conversion (OTEC) sites in the Pacific Ocean," by Uchida, synthesize available information that has pertinence to the operation of OTEC plants. The authors also extrapolate the information to probable OTEC operating conditions and provide perspectives on any potential risk to existing fisheries.

Morphology of Armorhead Studied

Research assistant Robert L. Humphreys, Jr., continued to process specimens of pelagic armorhead, Pentaceros richardsoni, collected on the Japanese trawler, Kitakami Maru, at the Hancock Seamounts by research assistant William B. Barnett, during August 1-October 1, 1981. Armorhead vary greatly in body morphology and appear to consist of three poorly defined body types: lean, intermediate, and fat. A meristic and morphometric study is being conducted to ascertain whether there actually are three distinct body types or if there is a continuum of body types, and whether this variation is indicative of the existence of more than a single species. To obtain more definitive results on the latter, 200 tissue samples of armorhead collected at Hancock Seamounts during NOAA research vessel Townsend Cromwell cruise 82-05 have been sent to Dr. Fred Utter, NMFS Seattle Laboratory, for electrophoretic analysis. Because of the lack of armorhead life history information, gonads, otoliths, and stomach contents have also been collected for future study.

Spiny Lobster Size at Maturity Study Continued

Research assistant James H. Prescott added more data on spiny lobster leg length (collected on the NOAA research vessel Townsend Cromwell cruise 82-05) to the data set on the size at maturity study. Using a new regression procedure suggested by Dr. Jerry A. Wetherall, Prescott indicated that the size at maturity of spiny lobsters around Necker Island is similar to that of spiny lobsters around Oahu. Prescott is revising his manuscript to include the latest analytical procedures and results.

Australian Fishery Scientist Studies Hawaiian Crab Fishery

Dr. Ian Brown of the Queensland Fisheries Service, Australia, visited Honolulu to study the State's kona crab fishery. During his stay in Honolulu, he was introduced to most of the commercial kona crab fishermen who provided Dr. Brown with information on catch and effort. Dr. Brown spent a day with research assistant Steven H. Kramer, J. Prescott, and Lt. (jg) J. Scott Ferguson on the Kaahale'ale for a demonstration of the Hawaiian method of kona crab fishing.

* * * * *

Reginald M. Gooding, Fishery Biologist, reports that the Northwestern Hawaiian Islands (NWHI) film committee (Dr. Robert Shallenberger, U.S. Fish and Wildlife Service, Dr. Polovina, and R. Gooding) met with representatives of several local movie production organizations about producing the proposed NWHI film. Gooding spent 2 days reviewing the available film with a representative of a movie production company.

Gooding also revised his manuscripts, "The effect of lobster offal on the spiny lobster, Panulirus marginatus, trap catches in the Northwestern Hawaiian Islands," and "Predation on released spiny lobster, Panulirus marginatus, in the Northwestern Hawaiian Islands." He also worked on a project proposal, "Ecological survey in waters off Necker Island and French Frigate Shoals with the Hawaii Undersea Research Laboratory submersible Makalii." The proposal has been accepted, and the dives will take place in June-July 1983.

FISHERY MANAGEMENT RESEARCH PROGRAM

Hawaii Skipjack Tuna Landings in January Below Long-Term Average

The January 1983 Hawaii landings of skipjack tuna were estimated at 55 metric tons (MT), which is 5.1 MT below the January 1982 landings and 96 MT below the 1964-80 long-term average for January.

LA JOLLA LABORATORY

Coastal Fisheries Resources Investigation

COASTAL EASTERN PACIFIC: POPULATION BIOLOGY OF FISHES

Sea Caught Larvae Analyzed for Nutritional Condition

Gail Theilacker, Fishery Biologist, previously described the histology of larval jack mackerel, *Trachurus symmetricus*, and developed criteria to assess the nutritional condition of laboratory-reared fish by comparing the histology of larvae of the same age that were fed, starved, and in which feeding was delayed. This month, she has been using these criteria to identify the condition of sea-caught larvae. This technique should be useful for detecting the incidence of starvation and predicting larval survival in the field.

In laboratory fish that were starved 2 days before feeding, vacuoles appeared in the gut epithelial cells. These were first-feeding larvae, and vacuolization was unique to larvae with this feeding history. This vacuolar condition appeared to signal that larvae had previously experienced a period of starvation. Theilacker named this condition "Recovering". The young mackerels required 2 days of eating to repair tissue damaged by 1 to 2 days of starvation, and they did not grow during this period.

Larvae in the ocean are subject to widely varying food concentrations, including no food, and laboratory feeding regimes cannot mimic these conditions. Sea-caught mackerel larvae of all ages have intracytoplasmic vacuoles in the gut epithelium. Subnuclear and membrane lined, these vacuoles are similar to the laboratory "Recovering" condition, thus wild mackerels experience periods when food is scarce. In addition, many sea-caught larvae have smaller, supranuclear and luminal vacuoles that were not found in the laboratory fish.

In higher vertebrates, any mild injury to the normal biochemical or metabolic state of the cell, for example, potassium deprivation, causes vacuolar degeneration. Vacuolation appears first as numerous small, clear vacuoles dispersed throughout the cytoplasm. As the condition becomes more severe, these minute vacuoles coalesce to form large, sometimes single, clear spaces that displace the nucleus. Possibly, this is the case with the wild larvae; on the other hand, the numerous luminal vacuoles may secrete mucous into the lumen or store fat.

To identify the presence of mucous cells, biological technician Jack Metoyer tested several mucous staining methods. As the control tissue, he used adult anchovy esophagus that contained numerous large saccular mucous cells. The mucicarmine staining procedure clearly identified the mucous cells

in the test tissue, but the luminal vacuoles in the epithelial gut cells of the field-collected jack mackerel did not stain, thus these vacuoles are not mucous secretory units.

Metoyer was unable to test for fat because it dissolves in the fixative which Theilacker needs to use to assess the criteria that identify larval condition. It is not known whether vacuolation represents a degeneration process and tests to ascertain this will be made at a later date.

Study on Benthic Chaetognaths Published

A paper by fishery research biologist Dr. Angeles Alvarino entitled "Benthic chaetognaths, study and distribution," presented originally at the VIII Latin-American Congress of Zoology held in 1980, at the University of Andes, Merida, Venezuela, was published this month in the Congress Proceedings. One of the aims of this work is to alert researchers to the study of these predatory benthic organisms, which are easy to maintain in the laboratory for behavioral and physiological studies.

Species of the benthic genus Spadella were studied on the basis of analysis of main diagnostic features. Species are grouped into the following three categories to obtain a comparative systematic study: 1) species with two pairs of lateral fins and digital adhesive features, 2) species with one pair of lateral fins and digital adhesive features, and 3) species with one pair of lateral fins and absence of digital adhesive features.

General characteristics of the species in the genus Spadella are discussed, and tables and illustrations included in the work to compare the main diagnostic features for determination of the species. Also discussed are reproduction, life cycle, food and behavior. The geographic distribution of the species in the genus is discussed and compiled in tables and distributional maps. The cosmopolitan characteristics of a few species are presented, as well as the restricted distribution shown by most species of Spadella.

Retention of Eggs and Larvae in Nets of Different Mesh Size Compared

Mathematician Dr. Nancy Lo used new data to update information on the retention of northern anchovy eggs and larvae in nets of various mesh sizes. The estimates of retention of anchovy eggs and larvae in three small mesh nets were investigated during a week-long field experiment conducted in March 1982 in the Los Angeles Bight at a single station (JD-8202). One hundred forty-two simultaneous vertical net tows were made using three 25 cm diameter CalVET nets mounted on the same wire, each with a different mesh size (0.333, 0.150, and 0.075 mm). The anchovy eggs taken in each of the nets were staged and the standard length of the anchovy larvae was measured.

The results of the three-net experiment showed that 0.333 mm mesh was not extrusion-free. The retentions of 0.333 mm Nitex mesh for eggs and larvae are

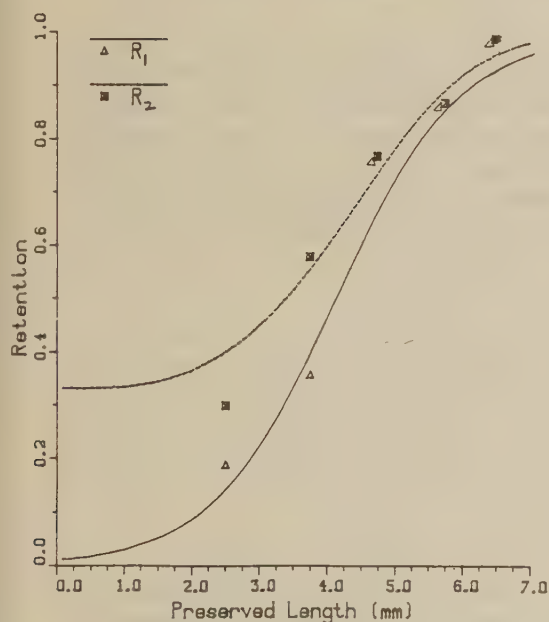
0.91 for eggs, 0.63 for larvae < 4.0 mm, 0.95 for larvae = 4.5 mm, and 1 for larvae > 4.5 mm. The retention of eggs and larvae for large mesh can be corrected accordingly. Two large mesh nets were considered: 0.55 mm mesh silk 1 m ring nets and 0.505 mm mesh Nitex Bongo nets.

A. Retention of eggs and larvae in 0.55 mm mesh silk 1-m ring nets.

In 1966-1968, mesh experiments were conducted to estimate the retention of egg and larvae in 0.55 mm compared to 0.333 mm mesh size. The egg and larva data from 1966-1968 mesh experiments together with those of 1982 three-net experiment were used to estimate the retention of eggs and larvae. The retention of anchovy eggs in 0.55 mm silk 1 m nets compared to 0.333 mm Nitex mesh and small mesh (0.075 or 0.150 mm) was 0.3 and 0.27 respectively. In order to correct the egg counts in 0.55 mm silk mesh nets, the egg counts must be multiplied by 3.62 (s.e. = 0.65). As to the larva retention the retention increases with the larva length. A logistic equation that describes the retention of $R(L)$ and preserved length (L) , resulting in the equation (Figure 1) is:

$$R(L) = \begin{cases} (1 + e^{4.53-1.098L})^{-1} & \text{for } L < 6.5 \text{ mm} \\ 1 & L > 6.5 \text{ mm} \end{cases}$$

RETENTION OF LARVAE



RETENTION OF LARVAE

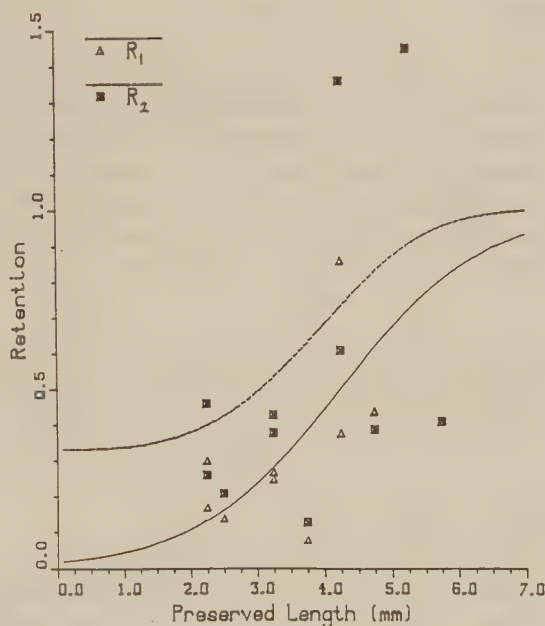


Figure 1 (left): Retention of anchovy larvae in 0.55 mm mesh silk 1 m ring nets compared to small meshes (0.075 or 0.150 mm) (R_1) and compared to 0.333 mm (R_2). Solid line is from equation (1) and dotted line is from Zweifel and Hunter (MS).

Figure 2 (right): Retention of anchovy larvae in 0.505 mm mesh nitex Bongo nets compared to small meshes (0.075 or 0.150 mm) (R_1) and compared to 0.333 mm (R_2). Solid line is from equation (2) and dotted line is from Zweifel and Hunter (MS).

B. Retention of eggs and larvae in 0.505 mm mesh Nitex Bongo nets.

Bongo-CalVET egg and larva data from CalCOFI stations where both net tows were made in 1979-1981, were analyzed to estimate the retention of eggs and larvae in 0.505 mm mesh Nitex Bongo nets compared to 0.333 mm mesh Nitex nets. These Bongo-CalVET egg and larva data combined with those from 1982 three-net experiment produced the following results: The retention of anchovy eggs in 0.505 mm mesh nitex nets compared to 0.333 mm mesh and small mesh (0.075 or 0.150 mm) was 0.09 and 0.08 respectively. In order to correct the egg counts in the 0.505 mm mesh Nitex Bongo net, the egg counts have to be multiplied by 12.76 (s.e. = 2.56). The larva retention ($R(L)$) by preserved length (L) was expressed by a logistic model (Figure 2).

$$R(L) = (1 + e^{3.965 - 0.9357L})^{-1}$$

Progress Reported on Drift Simulation Model

National Research Council/NOAA Research Associate Dr. James Power has completed the development of the computer program that calculates the matrix of flux coefficients for the anchovy larval drift simulation. Power is developing a simulation model that incorporates the relationship between current transport and population biology of northern anchovy in the California Current System.

These flux coefficients express the rates of larval transfer between the geographic cells in the simulation, and form the input to the actual simulation program. The portion of the simulation program that calculates larval concentrations at one time step in the future (i.e., the iterative solution of the matrix equation) has been completed and is undergoing testing. Using a hypothetical test case the program has been found to converge to the proper solution.

COASTAL EASTERN PACIFIC: FISHERIES ENVIRONMENT INVESTIGATIONS

Model and Field Study Program Proposed for Santa Barbara Channel

Ron Lynn, Oceanographer, participated in the first of three workshop as a member of a panel to review a project proposal for a Santa Barbara Channel circulation model and field study. The study is to be performed by Dynalysis of Princeton (main contractor) and Science Application, Inc. (sub-contractor) for the Minerals Management Service. Lynn, along with three other physical oceanographers, Drs. B. Hickey, University of Washington; C. Mooers, Naval Post Graduate School and J. Simpson, Scripps Institution of Oceanography, comprise the Advisory and Review Board. The role of the Board is to render advice in interpreting background data and the design of the field program and to propose numerical experiments to aid in assessing the skill of the model. In the first workshop, January 11-13, the board reviewed the proposed work plans and schedule.

The original plans called for a 3-month pilot study of the Santa Barbara Channel which includes a repeated grid of hydrographic casts, the deployment of 13 moored current meter strings, wind and weather monitoring stations, tide gauge and coastal wave stations. The pilot study is to be followed by 3-months of data analysis and then a 12-month field study. A numerical model employed in a high resolution mode in New York Harbor and in a coarse resolution mode for the California Current is being adapted for the Santa Barbara Channel. The grid resolution is 3-1/2 km. This spacing resolves circulation processes occurring adjacent to the coast. The aim of the work plan is to provide a synergistic interaction between the field studies and model.

The review board produced a series of recommended changes in the proposed plans for the field study including additional current meter strings, modification in positions of deployment, addition of wind monitoring stations and changes in the hydrographic station grid. Additional workshops will be scheduled as work progresses.

Exploratory Albacore Longline Fishing Charter Cruise Completed

Five chartered commercial fishing vessels conducted exploratory longlining operations for albacore tuna in an area centered about 1,000-1,500 miles west of San Diego, California, during November-December 1982. The objective of this study is to evaluate the potential for establishing a U.S. fishery on North Pacific albacore during winter months in the eastern North Pacific. The study was conducted cooperatively between the U.S. albacore fishing industry's American Fishermen's Research Foundation (AFRF) and the SWFC in La Jolla. Saltonstall-Kennedy funds managed by the NMFS Southwest Regional Office in Terminal Island, California, and awarded to the AFRF were used to charter the fishing vessels and finance other costs. The operational aspects of the study were carried on by the AFRF and managed by the Western Fishboat Owner's Association (WFOA), a west coast association of albacore fishermen. Fishery Scientists at the SWFC under the direction of Dr. R. Michael Laurs planned the study and worked with AFRF and WFOA to organize it. In addition, the SWFC provided scientific equipment. Also Ron Dotson, Bob Nishimoto and Dimitry Abramenkoff sailed on three of the vessels to make scientific observations and to keep detailed records related to the fishery operations and catch.

Results from the November-December operations are presently being processed and analyzed. A report of findings made on the cruise will be forthcoming about the end of March.

La Jolla Laboratory Scientists Invited to NATO Advanced Research Institute

Dr. R. Michael Laurs and Mr. Ronald Lynn were invited participants at a NATO Advanced Research Institute on "Mechanisms of Migration in Fishes" held in Acquafredda di Matratra, Italy during December 12 to 18, 1982. Mr. Lynn

delivered a talk concerning the "Physical Oceanographic Approach to Fish Migration" and Dr. Laurs gave a presentation dealing with "Vertical Distribution and Small-Scale Movements of Albacore Tuna In Relation to Oceanographic Feature." Forty-four fishery scientists from NATO nations attended the conference to review present knowledge regarding the mechanisms of fish migration and identify research areas that require study in the future.

COMMERCIAL AND RECREATIONAL FISHERY RESEARCH FOR MANAGEMENT

Draft Revision of Anchovy Plan Presented to PFMC

Alec MacCall, Fishery Biologist, reports that the first draft of a new, revised anchovy Fishery Management Plan has been presented to the Pacific Fishery Management Council (PFMC) and the Council's advisory groups, the Anchovy Advisory Sub-Panel and the Scientific and Statistical Committee. The draft revision, completed 2 months ahead of schedule, incorporates the new findings of researchers at the La Jolla Laboratory concerning stock size. Using the "egg production method" of estimating spawning biomass, laboratory scientists have concluded that the stock is only about 1/3 the size of previous "larva census" estimates. MacCall's analysis is about 273 thousand metric tons--slightly more than half the previous estimate.

The draft revision will now undergo internal and external review before an updated and augmented version goes to public hearing. The decision regarding the public hearing schedule and final implementation schedule will be made by the PFMC during its May meeting.

Pacific Mackerel Sampling Study Initiated

Susan Picquelle, Statistician at La Jolla, met with Rick Klingbeil, Fishery Biologist with the California Department of Fish and Game, and Dr. R. Parrish, Fishery Biologist at Pacific Environmental Group (PEG), to initiate a study of Pacific mackerel port sampling data. Picquelle, Klingbeil and Parrish discussed the current sampling scheme for mackerel and designed a data base that will be implemented by Donna Mallicoate, Statistician at PEG. The project has two goals: to produce estimates of age and species composition from existing data, and to re-design the sampling plan to produce more accurate and precise estimates.

Oceanic Fisheries Resources Division

TUNA AND BILLFISH RESOURCES PROGRAM

mtDNA Isolation Techniques Evaluated
on Fresh and Frozen Samples

Restriction endonuclease analyses of mitochondrial DNA (mtDNA) have provided an extremely powerful tool for ascertaining genetic relationships of terrestrial mammalian populations. In order for the technique to be of much use to fisheries biologists it must be able to work on frozen samples. Southwest Fisheries Center's fishery biologist Andrew Dizon and NRC/NOAA research associate John Graves are currently adapting several techniques developed for isolating mtDNA from fresh mammalian tissues to work with frozen fish and marine mammal samples.

There are two basic approaches to isolating mtDNA from tissue samples. Cesium chloride density gradient centrifugation isolates mtDNA from all other cellular constituents (including nuclear DNA) on the basis of slight density differences. In contrast, genomic DNA preparations isolate all cellular DNA from other constituents and then a variety of procedures can be used to separate or visualize the mtDNA from the nuclear DNA. Not an easy task since mtDNA represents only about 0.5% of the total cellular DNA.

Cesium chloride density gradient centrifugation has been successfully employed by the researchers to isolate mtDNA from fresh tissues of Pacific mackerel and recently from dry ice frozen tissues of Pacific mackerel, Pacific bonito, and the common dolphin. In addition, a survey of several conventionally frozen spotted dolphin samples demonstrated that mtDNA could be isolated from a few of the samples. These results suggest that although quick freezing and conventional freezing provide adequate samples, yields of mtDNA are significantly reduced. Lower yields are apparently due to rupture of nuclear membranes producing increased contamination and due to relaxation of the tightly coiled molecular structure of mtDNA thereby eliminating the slight density differences between the two forms.

Genomic DNA, which contains both nuclear and mitochondrial DNA, has been prepared from eight spotted dolphin. Three different approaches are being tested to isolate or visualize the mtDNA in the presence of the nuclear DNA in the genomic preparations: (1) hybridization with a radiolabeled mtDNA purified from a closely related species ("Southern Method"); (2) differential enzymatic digestion of mtDNA versus nuclear DNA; and (3) electrophoretic separation of the genomic DNA, excision of the mtDNA band and final density gradient purification.

The hybridization technique has been successfully applied to skipjack tuna and spotted dolphin in previous experiments. The differential enzymatic digestion technique has been tried with the marine mammal specimens and though

it gives fairly quick results, the technique cannot provide the depth of information available from the other techniques. The electrophoretic separation/mtDNA band excision method is currently under investigation.

To date, Drs. Dizon and Graves have successfully isolated mtDNA from both fish and marine mammals, and both fresh and frozen samples. All mtDNA isolation methods employed to date have met with some degree of success though no single approach seems best for all samples. The current plans are to pursue the most conservative route, the Southern Method, while continuing to evaluate the newer but untried methods.

Results of the Marine Game Fish Tagging Program-1982

A total of 1,006 billfish Pacific-wide were reported tagged and released in 1982, a decline from the 1,207 tagged in 1981. The 1,006 fish included 778 striped marlin (71% of total), 185 sailfish (18%), 28 black marlin (3%), and 16 blue marlin (2%). One swordfish was also tagged and released.

In 1981, the total catch of striped marlin off southern California was about 1,500 fish. This was an excellent fishing year but only 73 fish were tagged and released. In 1982 although the catch was smaller by about 500 fish, because of the additional emphasis by the National Coalition of Marine Conservation on tagging billfish in this area, a total of 82 fish were tagged and released.

A total of 19 billfish tags (17 striped marlin and 2 blue marlin) were reported recovered in 1982 off the coast of Baja California Sur, Mexico, a substantial increase over the 9 reported recovered in 1981. Three of the recoveries were by recreational anglers or sport fishing boat captains, 15 were by Japanese or Korean longliners, and one was recovered by a tuna purse seiner.

Status of Atlantic Tuna Fishery Sampling program

During the period January 1, 1982 to December 7, 1982, four Inter-American Tropical Tuna Commission-monitored (IATTC) foreign tuna purse seiners fishing in the Atlantic Ocean transshipped their catches to Puerto Rico. Twenty-one size composition samples were collected for the Tuna/Billfish Resources Program by the IATTC personnel. The sampling distribution is as follows:

Species	Trips sampled	# of samples	# of fish sampled
Yellowfin	7	13	580
Skipjack	6	10	475

Foreign-caught Atlantic tunas transshipped to Puert Rico are sampled routinely for biological information by biological technician Eugene Holzapfel. Data on fork length, weight and species composition of catches are collected. Results of Holzapfel's sampling during the period January 1, 1982 to December 1, 1982, are as follows:

<u>Species and Gear</u>	<u># of Samples</u>	<u># of fish Sampled</u>	<u>Tonnage Sampled (MT)</u>
Yellowfin			
Baitboat	18	1533	271.90
Purse seine	36	2803	2465.26
Longline	1	89	67.00
Unknown	12	973	263.01
Skipjack			
Baitboat	20	1016	1670.20
Purse seine	15	754	4462.65
Unknown	4	203	940.22
Bigeye			
Baitboat	3	86	2.77
Purse seine	21	753	735.39
Unknown	4	107	155.13
Albacore			
Longline	2	100	536.30
Blackfin			
Baitboat	1	50	6.12

MARINE MAMMAL BIOLOGY PROGRAM

Manuscript Completed Documenting Real-Time Deposition of Tooth Layers in Hawaiian Spinner Dolphins

Dr. Al Myrick, Leader of the Marine Mammal Age Determination Project, has completed the final draft of a manuscript on layer-accumulation rates in teeth of 7 tetracycline-labeled Hawaiian spinner dolphins at Sea Life Park, Hawaii. The animals studied had been given clinical doses of tetracycline, an antibiotic, intermittently over periods of years during their captive lives. In addition, three of them underwent a 1 year controlled experiment in which tetracycline was injected and teeth were extracted at regular intervals as additional dental layers were forming.

Tetracycline labels the calcium in the tooth layer being formed at the time of treatment by causing the layer to fluoresce when exposed to ultraviolet light. These labeled tooth "rings" are used to determine the rate of deposition of layers. Using the Park medical records, Myrick correlated the time of tetracycline treatment with the position of the fluorescing rings in order to define annual layers throughout each tooth.

The draft manuscript establishes base-line criteria for methods used in age determination of delphinids by describing the pattern characteristics of annual layers in dentine and cementum, verifying lunar monthly layers in dentine, and characterizing a general system of age-specific thicknesses of dentinal layers deposited during the life of a dolphin. The layer pattern, repeated annually, begins at birth and starts over again on birth-month anniversaries. Precise timing of annual and lunar-monthly layer deposition is apparent evidence that layer formation is under the influence of an internal clock (or clocks).

The manuscript is undergoing review preparatory to its presentation as a working document in the early March preliminary status of porpoise stocks ("pre"-SOPS) panel on age determination methods.

Reorganization of Dolphin Tooth Collection Completed

This month, the Age Determination Project completed the systematic reorganization of the entire tooth collection of more than 10,000 specimens. This task was initiated by biological technician Priscilla Sloan to permit easier access of tooth samples for age determination studies by consolidating samples by cruise number, taking inventory of all existing specimens, and comparing the inventories with dolphin life history records. The bulk of the work was accomplished by biological technicians Louis Arnell and Laurie Patla.

The reorganization has substantially shortened the time previously required to locate selected specimens.

Preparation of Teeth of ETP Spinner Dolphins Begun

Biological technician Priscilla Sloan reported that preparation of teeth has started on a randomly selected sample of 1,600 female spinner dolphin specimens. The work--using an optimized technique involving decalcifying, thin sectioning, staining, and mounting each tooth section--is the first step in an effort to re-evaluate biological parameters to age of animals for eastern and whitebelly spinners from the eastern tropical Pacific (ETP). Reading of the tooth sections to determine age is scheduled to begin in June.

Age-Determination of California Sea Lions in Progress

An evaluation of tooth-ageing techniques has been completed by Mark Lowry, Biological Technician, to determine the most practical procedure for ageing teeth from the California sea lion, Zalophus californianus. The teeth are collected from carcasses recovered by the staff of the Marine Mammal Salvage Program at the SWFC. A variety of procedures have been used to age pinniped teeth including: acid etching of half sections, decalcification and staining, and wafer sectioning by hand. The purpose of this study was to determine what type of tooth and what method provides the most precision and accuracy.

Acid etching worked best on upper canines and caniniform incisors for counting dentinal growth layer groups (GLG's), but cementum layering could not be examined with this technique. The advantage of the other two techniques--wafer sectioning and decalcified stain sectioning--is that both cementum and dentine layering can be examined for age determination. Portions of the hard-ground sections have opaque regions, making layers difficult to count. The decalcified and stained sections gave the best results for cementum and dentine layer analysis, therefore this technique will be used to complete the Zalophus tooth ageing project.

Another reason for using the decalcified stained sectioning technique is that although acid etching is the easiest method, teeth of old female sea lions have the root canal filled in at an earlier age than do males, because their teeth are much smaller. Dentinal age determination is inaccurate once the root canal is closed. The only alternative for ageing the teeth of older females is through cementum-layer analysis from decalcified and stained sections.

The precision of various techniques was investigated by comparing the two upper canines from the same animal. The layers, or GLG's, in the dentine of acid-etched teeth corresponded very closely to the GLG's in the dentine of the decalcified stained sections. The two upper canines from a captive 12-year-old male were examined with the acid etching and decalcified and stained sectioning technique. The acid etched section showed definite GLG patterns in the dentine. Unfortunately, the decalcified and stained sections did not show cementum layering and showed very poor dentinal GLG layering. It is hoped that other teeth from known-age captive animals and from wild-tagged animals will be acquired in the future for calibrating the GLG's to known-age animals. For now, however, the acid-etched section of the 12-year-old captive male is the only calibration check we have on the ageing analysis.

To document the dentine-cementum GLG ratio for ageing old female teeth, the chronological development of the tooth will be studied to examine the rate of tooth growth and cemental and dentinal layering with the standard length of the animal. At the present time, only upper canines will be used. In the future, the cementum of premolars will be studied for age determination because many of the carcasses recovered have the upper canines missing, and in some cases only premolars remain.

First "pre"-SOPS Panel Held

Southwest Fisheries Center (SWFC) scientists will be convening a series of panels of experts in the marine mammal area in order to review SWFC research results which might be used in a Draft Environmental Impact Statement (DEIS) for the tuna-porpoise fishery of 1986 and beyond. Review of SWFC documents by these panels is in preparation for the Status of Porpoise Stocks (SOPS) analyses in 1984. The experts have been chosen because their knowledge in the topic areas under review and their comments will be considered in preparation of the final SWFC documents.

Results of the panels' discussions of stock identity, species ranges, school density, average school size and species proportions will be used to calculate population sizes. These, in turn, will be examined in the context of fishing mortality, natural mortality, and reproductive rates to assess the status of the populations of various dolphin stocks.

The first meeting, chaired by fishery biologist Dr. William Perrin, was convened on January 28 to consider a manuscript report entitled, "Ranges of four dolphins in the eastern tropical Pacific, with an annotated catalog of data sources" authored by Perrin, Michael Scott (IATTC), G.J. Walker, computer specialist Frank Ralston, and fishery biologist David Au. Panel members were the authors (except for Walker) and Dr. S. Norris, University of California, Santa Cruz, Dr. James Mead, USNM, and Mr. Frank Alverson, Living Marine Resources.

The panel members approved of the ranges as proposed in the draft manuscript with the reservations outlined in a report of the first meeting and accepted the notion that a certain amount of estimation has to be done. The panel concluded its report with several recommendations:

- (1) More surveys should be done at various times of the year along the southern edges of known ranges.
- (2) More effort should be expended on examination of the regions between the known continuous eastern tropical Pacific (ETP) range and the island groups to the NW, W, and SW.
- (3) Considering the large numbers of sightings of unidentified dolphins in the central Pacific adjacent to the ETP, further effort should be made to train ocean-going staff of the Honolulu Laboratory in porpoise identification.

The report of the panel meeting was approved in draft form by the panel members before adjournment.

MARINE MAMMAL MONITORING AND ASSESSMENT PROGRAM

1983 Marine Mammal Cruise on Jordan Underway

The NOAA R/V David Starr Jordan departed San Diego, California, on January 11, 1983, to conduct a 90 day survey of marine mammals in the eastern tropical Pacific (ETP). The research vessel will concentrate its efforts in two areas: (1) the Calibration Area, an area of the ETP established in 1979 for multiple year studies and in which data could be collected from both ships and airplanes, and (2) along the 10°S latitudinal from Peru to the Marquesas Islands.

The primary objective of the cruise is to survey density, size and species composition of dolphin schools along the 10°S line which is approximately the southern boundary of tropical tuna/dolphin purse-seine fishery in the ETP. It also roughly coincides with the southern fringe of the known range of stocks of dolphins associated with the fishery. Density, size and species composition of dolphin schools in the central area of the fishery (the Calibration Area) will be surveyed to enable comparison of data from the southern area to those from the northern area and to data from surveys in previous years.

A second objective is to continue to develop sighting methodology. A recently developed apparatus (CAST system) will be further tested and evaluated to more precisely measure bearing and distance to sighted schools. More effective observer watch schedules and procedures will receive additional investigation.

On the return leg to San Diego, the ship will rendezvous with the NOAA R/V Surveyor and conduct experiments to investigate the reaction of dolphins to approaching vessels. The Jordan is expected to make port in San Diego on April 13, 1983.

The scientific party consists of 6 observers with experience observing marine mammals, an environmental specialist, and the cruise leader. Operation research analyst Dr. Jay Barlow is the leader on the San Diego to Peru segment and fishery biologist Dr. Wes Parks, the leader on the Peru to Tahiti to San Diego segment.

TIBURON LABORATORY

FISH COMMUNITIES INVESTIGATION

Second Western Groundfish Conference Termed Success

The Second Western Groundfish Conference was held from January 10-12, 1983, at the Asilomar Conference Center, Pacific Grove, California. Dr. William Lenarz, Leader of the Rockfish Analysis Task, and one of the organizers of the Conference, reported that 58 presentations were made by researchers from the United States and Canada on a wide range of groundfish topics. The presentations were grouped in eight sessions: I. Economics and Modeling; II. Major Topic Reviews; III. Sample Design, Problems and Methodology, of Resource Assessment; IV. Distribution and Community Structure; V. Food Habits; VI. Life History and Biology, VII. Management; and VIII. Elasmobranch Biology and Management.

The staff of the Fish Communities Investigation was a major contributor to the Conference. Aside from the leading role played by Dr. Lenarz, eight of the presentations resulted from research done by the Investigation's two tasks. Four were from the Predator/Prey Task: fishery biologist James R. Chess presented results of his and fishery biologist Susan Smith's study on trophic relations of the shortbelly rockfish, biological technician Dan Howard described seasonal patterns in the trophic relations of kelp greenling, Connie Ryan reported on the feeding of the brown rockfish, and Susan Smith described her studies of age determination and movements in the leopard shark. The other four presentations were from the Rockfish Analysis Task: Lenarz spoke on studies done with fishery biologist Tina Echeverria on comparative biology of rockfishes, fishery biologist Candis Cooperrider defined the cost components of sampling rockfish landings, Echeverria compared microscopic and macroscopic determinations of sexual maturity in rockfishes, and biological aid Patrick Guillemot described the seasonal cycles of fat content and gonad volumes in rockfishes.

Predator/Prey Task

During January, Susan Smith, Fishery Biologist with the Predator/Prey Task, presented a talk at the Second Western Groundfish Workshop held at Asilomar, California. The talk, entitled "Age Validation and Movements of Field-tagged Leopard Sharks (*Triakis semifasciata*) in San Francisco Bay" summarized results of her work with tetracycline-injected leopard sharks she originally tagged and released 3 years ago while working under the Fishery Development Task. A first draft of the Triakis manuscript was also completed this month.

LOCAL FISHERIES DEVELOPMENT TASK

Work Progressing on Fish Aggregating Device (FAD)

Fish aggregating devices (FADs) will be deployed off southern California this summer, in a joint project of the Tiburon Laboratory and the San Pedro Fishermen's Cooperative Association. Lawrence Bozanich, General Manager of the Association, has informed Task Leader Sus Kato of the exact localities where fishermen would like to locate the FADs, which they hope will attract and hold bluefin tuna. Both localities are near the U.S.-Mexican border.

Most of the rigging to be used in construction of two FADs has been procured and is being assembled at the Tiburon Laboratory. Fishery biologist Sennen Salapare and NOAA Corps Lt. Pat Rutten have supplied most of the labor-intensive effort of making up lines and threading plastic strapping material through the layers of the nylon drop lines. Placement of the devices off southern California next June will mark the first testing of FADs off the West Coast of the U.S. mainland.

Squid Fishing Extremely Poor This Season

To gather material for a squid workshop to be held in Newport, Oregon, in February, fishery biologist Sus Kato went squid fishing aboard the vessel, Jeanie M., out of San Pedro, California, on January 19-21. The current squid fishing season, which started in November of last year, has been about the poorest since the fishery began 25 years ago. Very few squid have been detected at the Channel Islands, and most of them failed to respond positively to lamps used to attract and concentrate squid which are in spawning aggregations. Thus, most of the significant catches to date have been made by purse seine rather than the "light and scoop-net" method which normally accounts for 75% of the squid catch in southern California.

Because of the scanty catch of squid, the ex-vessel price started and has remained at \$300 per ton, double last year's price.

One reason for the absence of spawning schools of squid may be unusual oceanographic conditions. Surface water temperature was around 62°, and the pelagic red crab, Pleuroncodes planipes, was abundant at all the Channel Islands. The crabs usually occur off central Baja California, and only occasionally show up in large numbers off southern California. It appears that the squid workshop which will address the possibility of expanding the west coast squid fisheries out from the traditional California fishing grounds, will take place at a rather appropriate time.

Papers Presented at Groundfish Conference

Industry economist Ed Ueber presented two papers at the Western Groundfish Conference which convened at Asilomar, California, January 10-12. The papers dealt with yield predictions of various rockfish fisheries and their implications to management of those fisheries.

PHYSIOLOGICAL ECOLOGY INVESTIGATION

Hudson River Striped Bass Study Completed

Fishery biologist Dr. Whipple and staff have completed their data analysis and a report to the Hudson River Fisherman's Association on the sample of striped bass collected from the Hudson River in May 1982. The fish from the Hudson River differed from those in California in many respects, including parasitic fauna and condition. In general, they appear to be healthier fish than those from California but some fish showed evidence of stress. The report will be published with other data in the future.

Work continued on the revision of the manuscript on lipid and fatty acid compositions of striped bass eggs. New material on lipophilic contaminants found in striped bass eggs and other research completed on other fish species is being incorporated into the manuscript.

Herring Fishery off of Tiburon

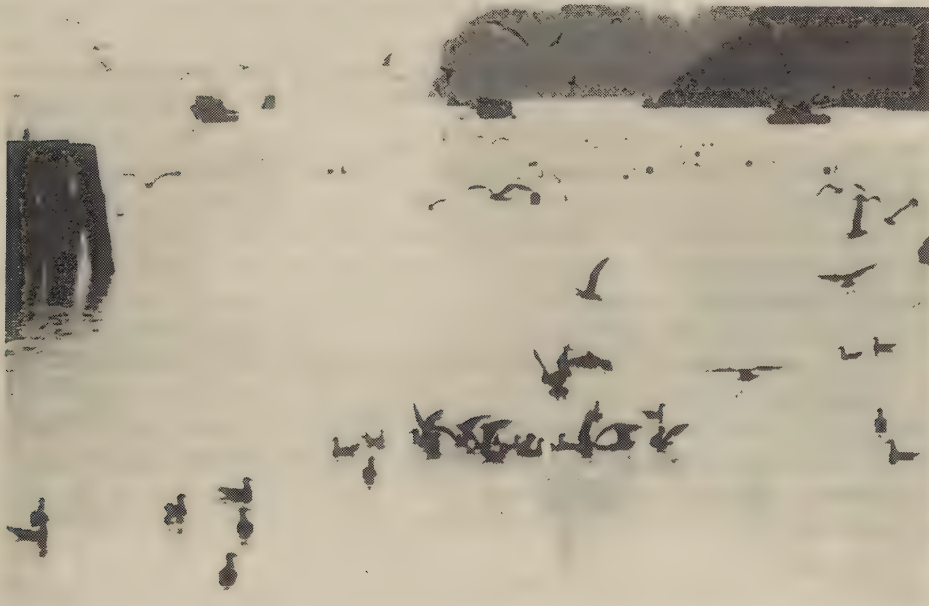
Each winter during the herring spawning run in San Francisco Bay, a fleet of gillnet and round haul boats harvests a portion of the population. The object of the fishery is to take fish with eggs because the eggs bring a high price in the Japanese market. This limited entry fishery is managed by the California Department of Fish and Game.



Gillnetters tied to their anchored nets off of the Tiburon Laboratory docks.



Netted herring being pulled aboard.



Corklines mark two nets set inshore of the Tiburon Laboratory docks.

FISHERIES INFORMATION SYSTEMS AND AUTOMATIC DATA PROCESSING

PACFIN Update

A Pacific Coast Fishery Information Network (PACFIN) meeting was held on January 28 in San Francisco, California. Representatives from the Southwest Fisheries Center, Southwest Region, Northwest Region, Northwest and Alaska Fishery Center, California Department of Fish and Game, Washington Department of Fisheries, Alaska Department of Fish and Game, Oregon Department of Fish and Wildlife, North Pacific Fishery Management Council, Pacific Fishery Management Council, and the Pacific Marine Fisheries Commission attended the meeting. The Fishery Management Information System (FMIS) and the Fishery Research Information System (FRIS) were discussed at the PACFIN meeting. The states will continue to send summaries on groundfish on the FMIS for the management of the fisheries. The 1981 vessel and landings data for the FRIS will be obtained from the states in June 1983. The data from California, Oregon, and Washington should be accessible to users in August 1983.

CALFIN Update

John Davies, Southwest Fisheries Center employee stationed at the Southwest Region (SWR), reports that CALFIN computer files have been established on the ADP Network System for the proposed joint venture in the jack mackerel fishery. The following files are included:

- commercial jack mackerel landings in California and Mexico (1945-1981),
- U.S. production and value of tuna and mackerel meal and oil (1945-1980),
- California landings of jack mackerel by area, also total value of all landings (1945-1981),
- Monthly landings of jack mackerel in California (1945-1981),
- Geographical distribution of southern California jack mackerel catches expressed as a percentage of tuna (1945-1972),
- annual catches of California commercial passenger fishing fleet,
- mackerel v. total fish (1945-1981),
- landings of wetfish species by vessels landing jack mackerel (1973-1976),

- cases of canned mackerel produced in the U.S. (1945-1981),
- cases of canned pet food containing jack mackerel produced in California (1952-1977), and
- U.S. production and value of tuna and mackerel meal and oil (1945-1980).

* * * * *

Norm Abramson, Tiburon Laboratory Director, has completed the California port-sampling study. The purpose of the report is to determine what statistics are needed for the council management plans and to compare these needs with the existing landings sampling activities being conducted in California.

* * * * *

A CALFIN meeting was held at the La Jolla Laboratory to discuss ADP, port-sampling and statistics activities in California. Norm Abramson, Tiburon Laboratory, Tim Farley, California Department of Fish and Game (CDF&G), Svein Fougner, Southwest Region (SWR), Dick Heimann (CDF&G), Mel Odemar (CDF&G), Tom Jow (CDF&G), B.G. Thompson, National Marine Fisheries Service Headquarters, Gary Smith (SWR), and Fred Kellenberger, Southwest Fisheries Center, (SWFC), attended the meeting. Dave Mackett of the SWFC facilitated the meeting.

The interpretative structural modeling method was used to develop a Program Evaluation and Review Technique (PERT) diagram during the meeting. Susan Iacometti, Computer Systems Programmer, operated the Interpretative Structural Modeling Technique for the PACFIN Joint Federal and State meeting held in the SWFC's auditorium on January 24 and 25. For this meeting a new 5' foil-type screen for daytime projects was used. Because the size of the screen proved to be very satisfactory, a request to purchase this type of screen has been submitted. This screen would complete the video equipment for the Center's planning and training sessions utilizing computer access. The video configuration consists of a TAB 132/15 CRT terminal with a video port, a VEN-TEL modem, a printer, an Electrohome video projector, and the 5' daytime screen. In connection with this video system, Iacometti wrote the documentation on enlarging CRT output for projection on the screen.

ADP Operations

Dorothy Roll, Systems Analyst, reports that approval has been received for the procurement of the multiuser upgrade and software for the Honolulu Laboratory's Compu Pro CP/M-based microcomputer system and the procurement of four printers for the CRT terminals and the La Jolla Standard Micro-computer systems.

The East-West Center (EWC), a non-profit institution on the campus of the University of Hawaii, has supplied the Honolulu Laboratory with computer processing and word processing support for 2 years. However, a recent change in the upper management staff at the EWC triggered a change in their policy on computer services. The computer support for the Honolulu Laboratory will cease the end of February. It has been determined that a multiuser super micro-computer system would be a viable replacement for the EWC computer service. A procurement request for the Molecular Super Micro 64X is a multiprocessor system providing each user with a CP/M compatible 8-bit application processor and the optional CP/M-86 compatible performance accelerator which allows 16-bit processing for number crunching. The Molecular 64X can support 32 users.

FRS Meeting Held

Robert Nydam, Computer Programmer Analyst, and Dorothy Roll attended the January 11 afternoon session of the Financial Reporting System (FRS) in the La Jolla Laboratory. Nydam gave an overview of the planned system for the FY 84 FRS. The system will be implemented if approval is granted for the purchase of a multiuser super micro-computer system. The advantages of an onsite super microsystem are timely validation of data entries and immediate responses for query reports. There would be dial-up capabilities to the onsite system from the field laboratories (Honolulu, Tiburon, Monterey) and the regional office in Terminal Island.

On the third day of the FRS Users Meeting, Mr. Jack Atwell, WASC office in Seattle, gave an overview of the WASC and PATS computerized personnel system. ADP Operations provided the terminal/printer and communication equipment for the demonstration on originating SF-52's into the PATS system, which is implemented on NOAA's telecommunication services (ADP Network Services). In order that the administrative staff can be trained to use the WADC and PATS systems by March 31, 1983, ADP Operations received verbal approval from headquarters office in Washington, D.C., to purchase modems to connect existing terminals with ADP Network Services.

Microcomputer Committee Meets

The Microcomputer Review Committee met on January 10. In attendance were data systems manager Fred Kellenberger, systems analyst Dorothy Roll, computer programmer analyst Robert Nydam, computer systems programmer Susan Iacometti, mathematician Al Coan, and oceanographer Larry Eber, who substituted for Richard Charter. The committee's recommendations are 1) to procure the Molecular Supermicro-computer 64X for administrative and data management applications, and 2) to procure a SAGE II 68000 microcomputer with FORTRAN 77 for scientific applications. The Molecular 64X is a multiuser CP/M based system with local maintenance support. The SAGE II is a single user high performance unit (512K byte main memory, 16/32 bit processor) for data reduction and analysis applications. If the SAGE II proves satisfactory, additional systems will be recommended for the Center's laboratories.

Standard Word Processing System Considered

The Word Processing Committee met on January 31 to review the progress on a standard word processing system for the Center. The members are fishery biologist John Hunter, secretary Julie Shoemaker, and electronics engineer Jack Brown, from the Coastal Fisheries Resource Division, fishery biologist Andy Dizon, and secretary Frances Begley from the Oceanic Fisheries Resource Division, data systems manager Fred Kellenberger, systems analyst Dorothy Roll, and editorial assistant Lorraine Prescott from Data Management and Technical Support. The purpose of a recommended system is to minimize the retyping of texts by the secretarial staff and re-editing of texts by the scientific/technical staff. With the proliferation of CP/M microsystems, many scientists are using WORDSTAR, the CP/M based word processing software, for drafting their manuscripts and letters/memorandums. The committee will investigate the capability of transferring edited text from the microprocessor the NBI systems II and III. Two CRT terminals, specifically programmed to work with systems running WORDSTAR, will be purchased for use by Shoemaker and Prescott. They will learn to use WORDSTAR in order to assess its capabilities in comparison with the NBI system.

* * * * *

To ease the clogged lines through the Center's switchboard, fifteen CENTREX lines were installed in the Laboratory for computer usage. the UCSD CENTREX system allows 4 digit direct dialing into the computer center's switch to the host system.

* * * * *

The Tiburon Laboratory's computer user area was remodeled during January for the installation of a console printer and a user work table. The project involved removal of walls, doors, pipes, etc., new wiring and carpeting. In addition to the primary objectives, the modifications increase the light, decrease the noise, and allow a more efficient arrangement of the equipment.

* * * * *

In support of talks given at the Second Western Groundfish Workshop, January 10-12, a series of graphs were created using the computer graphics packages developed by Ltjg. Fred Plotkin, assigned to ADP Tiburon Task. The flexibility and timeliness of the system were demonstrated when several graphs required non-standard features and the failure of key film equipment forced a switch to a paper medium on short notice.

MISCELLANEOUS

PUBLIC AFFAIRS

La Jolla Laboratory

- January 10 - Fishery biologist Jim Squire presented a talk on "Management of Billfish Resources in the Pacific" to the Rancho Bernardo Anglers.
- 14 - Dr. Mike Laurs, Oceanographer, gave a talk describing his satellite imagery work to a group of 18 students from Grand Canyon College in Phoenix, Arizona. The students also saw a slide show on the work of the Southwest Fisheries Center, and toured the La Jolla Laboratory.
- 18 - Dr. Douglas DeMaster, Wildlife Biologist, presented a lecture on the life history of California pinnipeds to the monthly meeting of the Southwest Wetlands Association (SWA). SWA is one of a number of local environmental groups that is concerned with the proper conservation of renewable resources in California. In particular this group is working to revegetate the wetlands around Imperial City. DeMaster's talk focused on how to discriminate between the six species of pinnipeds in southern California, how large the current populations are, whether or not they are increasing, and how these populations interact with local fisheries. The large, format color photos that were made up for the October, 1982 Open House were put on display and proved very effective in "warming up" the audience and giving them a great deal of information on the Marine Mammal Protection Act of 1972 and each of the different species.

Tiburon Laboratory

- January 11 - Mickey Eldridge, Fishery Biologist, presented two talks on ecology of the marine environment and fisheries biology to biology classes at Chaffey Union High School, Ontario, California.

SEMINARS

Honolulu Laboratory

- January 20 - Dr. Ian Brown, Queensland Fisheries Service, Australia, spoke on "Research on and fisheries for spanner (kona) crabs in Australia."
- 26 - Dr. Bruce Phillips, Division of Fisheries and Oceanography, CSIRO, Cronulla, N.S.W., Australia, spoke on "Recent research on spiny lobster stock and recruitment."

La Jolla Laboratory

- January 11 - Mr. Witold L. Klawe, Inter-American Tropical Tuna Commission, presented "A Model of Basic Concepts and Terminology of Fish Capture and Catch Statistics."
- 26 - Mr. David H. Rand, NMFS Management and Budget Staff, Washington, D.C., presented a seminar on FY 1983/84 Budget and CYOPs.
- 27 - Dr. Timothy Gerrodette, Post-Doctoral Research Associate, National Research Council, NOAA, SWFC, presented "Confidence Limits on Age-Stratified Population Projections."

TRAINING

La Jolla Laboratory

- January 5 - Frank Ralston, Computer Specialist, "Microcomputers," La Jolla, California.
- 11 - Barb Engstrand, Program Support Assistant, "Agency Budgeting."
- 13 - Ken Wallace, Computer Programmer Analyst, "Introduction to Computer Graphics," La Jolla, California.
- Al Jackson, Biological Technician, "FORTRAN Programming," La Jolla, California.

- 24-28 - Sam Herrick, Al Myrick, Norm Bartoo, Rick Methot, Steve Reilly, Rennie Holt, Susan Picquelle, Alec MacCall, Virginia Hostler, "Supervisors Training Seminar."

Tiburon Laboratory

- January 24-28 - P. Adams, Fishery Biologist, T. Echeverria, Fishery Biologist, Bruce MacFarlane, Oceanographer, Supervisory Training.

VISITORS

Honolulu Laboratory

- January 4 - Ted Rice, Beaufort Laboratory, NMFS, visited Richard Shomura.
- 7 - Ensign Jo-Ann Flanders, NOAA Corps, met with Richard Shomura to discuss the possibility of a shoreside assignment for her at the Honolulu Laboratory.
- 10 - Roniti Teiwahi of Tarawa, Kiribati, and Peter Rappa of the University of Hawaii Sea Grant Marine Advisory Program, visited Richard Shomura.
- 17 - Dr. Ian Brown, Queensland Fisheries Service, Australia, arrived in Honolulu for a week's visit.
- Dr. Phyllis Cahn of C.W. Port College, Long Island University, New York, met with Dr. Barrett, Richard Shomura, and Dr. Richard W. Brill to discuss a research proposal.
- 17-19 - Richard Shomura met with Dr. Paul Callaghan and Dr. Roy Tsuda of the University of Guam on several occasions.
- 25 - Dr. Lamarr Trott met with Richard Shomura and Richard Uchida.

La Jolla Laboratory

- January 3- 6 - Dr. William Bellows, Industry Economist from the Washington, DC, office was at the La Jolla Laboratory to consult with Dr. Huppert concerning procedures for economic evaluation of recreational fishing.

- 7 - Chuck Flaherty, Whale Museum, Friday Harbor, Washington, visited the Laboratory.
- 11-13 - Representatives from Honolulu, Tiburon, and PEG were at the Laboratory to attend the FRS Users Meeting.
- 17 - Professor Ned Grossnickle and a class of students from Grand Canyon College in Phoenix, Arizona, toured the Laboratory.
- 17-21 - K. Kosla from the Auke Bay, Alaska Laboratory of the National Marine Fisheries Service was a guest at the Laboratory.
- 19 - Admiral Kelly E. Taggart, Acting Assistant Administrator for Ocean Services and Coastal Zone Management, and Don Nortup, Director of Personnel, NOAA Corps, both out of Washington, DC, visited the Laboratory.



Assembled for Admiral Kelly Taggart's visit to the Southwest Fisheries Center La Jolla Laboratory (l-r): Dr. Gary Sakagawa, Chief of the Oceanic Fisheries Resources Division; Dr. Roger Hewitt, LCDR, NOAA Corps; Charles Molyneaux, CDR, NOAA Corps; John Carr, Deputy Director, SWFC; Admiral Taggart; Don Nortup, Director of Personnel NOAA Corps, Washington, DC; Dr. Reuben Lasker, Chief of the Coastal Fisheries Resources Division.

- 21 - Dr. Juan Luis Cifuentes and Dr. Torres, professors at the University National Autonomous of Mexico, met with Dr. Angeles Alvariño to discuss their project of histological comparative studies of the digestive tract of invertebrates.
- 24-25 - Messrs. Norm Abramson, Tiburon Laboratory, Svein Fougner and Gary Smith, Southwest Regional Office, and Tim Farley, Dick Heimann, Eric Knaggs and Mel Odemar, all, with CDF&G, were at the Laboratory to attend the Activity Structuring Meeting.
- 26 - Mr. David H. Rand, NMFS, Washington, DC, visited the Laboratory.
 - Mr. Mel Odemar, CDF&G, was at the Laboratory to attend a CDF&G planning session.
- 27 - Dr. Ken Norris, University of California at Santa Cruz, was at the Laboratory to attend a pre-SOPS (Status of Porpoise Stocks) meeting.

Tiburon Laboratory

- January 13 - Dr. Donald Gunderson, University of Washington, Seattle, Washington.
 - Rick Stanley, Department Fish and Oceans, Pacific Biol. Station, Nanaimo, B.C., Canada.
 - Richard Uchida, Honolulu Laboratory, NMFS, Honolulu, Hawaii.
 - Michael Mohr, Humboldt State University, Trinidad, California.
 - Troy Nelson, Arcata, California.
- 17 - M.R. Yeager, Syska and Hennessy, San Francisco, California.
 - Fred E. Jacob, Syska and Hennessy, San Francisco, California.
- 21 - Martha Scott, Strong Center, Berkeley, California.
- 27 - Fred Kellenberger, NMFS, SWFC, La Jolla, California.

Pacific Environmental Group

January 13-14 - Rick Dickson and Rick Klingbeil, from California Fish and Game Department, Long Beach, California.

- Susan Picquelle from Southwest Fisheries Center, La Jolla, California.

18 - Admiral Taggart, Director, NOAA Corps, and Acting Director, National Ocean Service, Washington, DC.

- CDR Don Nortup, Director of Personnel NOAA Corps, Washington, DC.

24-25 - R.M. Laurs and Ron Lynn from Southwest Fisheries Center, La Jolla, California.

- Ledolph Baer, Office of the Chief Scientist, National Ocean Service, Rockville, Maryland.

MEETINGS AND TRAVEL

Honolulu Laboratory

January 10-12 - Richard Uchida attended the Second Western Groundfish Workshop at the Asilomar Conference Center in Monterey, California.

11 - Richard Shomura, Dr. Skillman, Dr. Wetherall, Samuel G. Pooley, and Kitty Simonds of the Western Pacific Regional Fishery Management Council met to discuss the billfish FMP.

12 - Richard Shomura, Dr. Polovina, Reginald Gooding, and James H. Uchiyama participated in a meeting of the Coordinating Council for Research--Northwestern Hawaiian Islands.

14 - Richard Shomura and Honolulu Laboratory Program Leaders met with Fred Kellenberger to discuss microcomputer hardware procurement plans.

17-19 - Richard Shomura, Center Director Barrett, Dave Mackett, Dr. Skillman, Howard Yoshida, and Sam Pooley attended sessions of the 28th meeting of the Council's Scientific and Statistical Committee.

- 21 - Howard Yoshida met with Richard Shomura and Honolulu Laboratory Program Leaders to plan the 1982 cruise schedule of the R/V Kahele'ale.
- 24-28 - Dr. R. Brill, Dr. Polovina, Sam Pooley, Fletcher Riggs, and James Uchiyama traveled to La Jolla, California, to attend the supervisory training class.
- 27 - A meeting to discuss the Hawaiian spiny lobster resource and future spiny lobster research needs was attended by Richard Shomura, Dr. Skillman, Richard Uchida, Ray Sumida, and James Prescott; Doyle E. Gates, Western Pacific Program Office, SWR; Dr. Craig MacDonald, University of Hawaii; Henry Sakuda, Hawaii Division of Aquatic Resources; and K. Simonds.
- 31 - Richard Shomura departed for Japan to meet with Japan Fisheries Agency officials and to participate in the Japanese Tuna Fishery Research Conference.
 - Richard Uchida and Walter Matsumoto traveled to Hilo, Hawaii, to attend a meeting, called by the Office of the Mayor of Hilo, regarding the Honolulu Laboratory's squid research.

La Jolla Laboratory

- January 3-10 - William Flerx traveled to Honolulu, Hawaii, to assemble scientific and collecting gear and prepare scientific workspaces prior to departure of Townsend Cromwell cruise 8302.
- 6-25 - Paul Smith traveled to Honolulu, Hawaii, to train the crew of the Townsend Cromwell in CalCOFI techniques and describe the approach to the California Current.
- 9-12 - Doug DeMaster traveled to Honolulu to discuss analysis of monk seal mark/recapture data.
- 10-12 - Ron Lynn traveled to Los Angeles, California, to participate in the Review Panel of Mineral Management Service/Dynalysis of Princeton Workshop.
 - John Carr and Dave Mackett traveled to Monterey, California, to attend a Western Groundfish Workshop.
- 10-13 - Izadore Barrett traveled to Monterey, California, to attend a Western Groundfish Workshop and to Portland, Oregon, to attend the Pacific Fishery Management Council's Scientific and Statistical Committee meeting.

- 10-14 - Dan Huppert traveled to Portland, Oregon, to attend SSC and PFMC meetings.
- 11-13 - Alec MacCall traveled to Portland, Oregon, to attend the Pacific Fishery Management Council meeting.
 - A FRS Users Meeting was held in the auditorium.
- 11-15 - Fred Kellenberger traveled to Honolulu to meet with Honolulu Laboratory staff on ADP and FIN.
- 12-15 - Susan Picquelle traveled to Monterey, California to discuss Pacific mackerel data and sampling schemes with PEG staff and CDF&G.
- 13 - A CalCOFI meeting was held in the small conference room.
- 15-18 - Jim Thrailkill traveled to Seattle, Washington, to attend a Marine Command Seminar.
- 15-19 - Henry Orr traveled to Fort Collins, Colorado, to participate in an illustration presentation at the Larval Fish Conference at Colorado State University.
- 16-21 - Dave Mackett traveled to Honolulu, Hawaii, to facilitate an SSC planning meeting on the Groundfish Fishery Management Plan.
- 17-20 - Izadore Barrett traveled to Honolulu, Hawaii, to attend the Western Pacific Council's SSC meeting and to Terminal Island to meet with the Regional Director.
- 20 - John Carr traveled to Terminal Island, California, to meet with the Regional Director.
- 20-23 - Rick Methot traveled to Davis, California, and Bodega Bay, California, to consult with researchers regarding population dynamics of crab and salmon.
- 24-25 - An Activity Structuring Meeting was held in the auditorium.
- 24-25 - Ben Remington and Richard Winn traveled to Terminal Island, California, to participate in a budget presentation to Southwest Regional Office staff.
- 24-28 - A Supervisory Training Course for SWFC employees was held at the Bahia Resort Hotel.

- 25-27 - Izadore Barrett traveled to Washington, DC to attend NMFS Research Council meeting.
- 27-28 - Fred Kellenberger traveled to Tiburon, California, to meet with Tiburon Laboratory staff and to San Francisco to attend a PACFIN meeting.
- 27-31 - Chuck Oliver traveled to San Clemente Island to continue studies on pinnipeds.
- 28 - Dave Mackett traveled to San Francisco, California, to attend a PACFIN meeting.

Tiburon Laboratory

- January 3- 4 - Norman Abramson traveled to La Jolla, California, for a State-Federal Workshop on ADP, sampling and statistics.
- 9-12 - Norman Abramson, Bill Leet and Ed Ueber traveled to Asilomar, California, to attend the Second Western Groundfish Workshop.
- 9-13 - Bill Lenarz, Dan Howard, Candi Cooperrider, Pat Guillemot, Tony Chess, Tina Echeverria, Edmund Hobson, Constance Ryan, and Susan Smith traveled to Asilomar, California, to attend the Second Western Groundfish Workshop.
- 11-13 - Walburga Giguere traveled to La Jolla, California, to attend the FRS Users Meeting.
- 20 - Ed Ueber traveled to San Francisco, California, to attend the San Francisco Sea Grant Advisors meeting.
- 23-28 - Peter Adams, Tina Echeverria, and Bruce MacFarlane traveled to San Diego, California to attend a supervisory training course.
- 24-25 - Norman Abramson traveled to La Jolla, California, to attend the State-Federal Workshop on ADP, sampling and statistics.
- 28 - Norman Abramson attended a Pacific Coast Fisheries Data Committee meeting at the San Francisco Airport.

Pacific Environmental Group

January 10-13 - Margaret Lazanoff attended the FRS Users Meeting at
at the Southwest Fisheries Center, La Jolla, California.

24-28 - David Husby attended the Supervisory Seminar in San
Diego, California.

PERSONNEL ACTIONS

Honolulu Laboratory

- January 4 - Marlene W.L. Dung, Data Transcriber - Conversion to
excepted appointment.
- 15 - Brent M. Miyamoto, Computer Technician - Termination -
expiration of appointment.
- 17 - Louise F. Lembeck, Editorial Clerk (Typing) - Part-time
temporary appointment.
- Happy A. Williams, Biological Aid (Microbiology) -
Part-time temporary appointment.
- 24 - Kathleen M. Lau, Computer Programmer - Part-time
temporary appointment.
- Amy F. Nishimura, Computer Programmer - Part-time
temporary appointment.
- James H. Prescott, Biological Technician (Fisheries) -
Extension of temporary appointment.
- Rodney T. Watson, Biological Technician (Wildlife) -
Conversion to excepted appointment.

La Jolla Laboratory

- January 2 - Richard Kiy, NOAA Junior Fellow - Leave Without Pay.
- Lisa Lau, NOAA Junior Fellow - Leave Without Pay.
- Roberta Folk, NOAA Junior Fellow - Leave Without Pay.
- 5 - Biological technicians Robert Pitman, Conrad Doxey,
Michael Henry, Gregory Yee, James Cotten, Michael
Graybill - Pay adjustment to full time.

- 10 - Kathy McKune, Clerk Typist - Change in Schedule.
- Espie Manaligod, Clerk Typist - Change in Schedule.
- 27 - Rebecca Hankins, Biological Technician - Resignation.

Tiburon Laboratory

January 22 - Robert E. Hamilton, Computer Programmer - Termination.

